1987

Nebraska Summary: S037-S038 Massey Ferguson 399

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SUMMARY OF OECD TESTS 1105 & 1106—NEBRASKA SUMMARY 037/038
MASSEY FERGUSON 399 DIESEL (2WD & FWA)
12 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP *(kW)*	Crank shaft speed rpm	Fuel Consumption Gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION (540 RPM SHAFT)					
Rated Engine Speed—(PTO speed—627 rpm)					
90.5 *(67.5)*	2200	5.49 *(20.79)*	0.422 *(0.257)*	16.50 *(3.25)*	
Standard Power Take-off Speed (540 rpm)					
85.8 *(64.0)*	1893	4.96 *(18.79)*	0.403 *(0.245)*	17.31 *(3.41)*	Air temperature
VARYING POWER AND FUEL CONSUMPTION					75°F *(24°C)*
90.5 *(67.5)*	2200	5.49 *(20.79)*	0.422 *(0.257)*	16.50 *(3.25)*	
79.4 *(59.2)*	2263	4.96 *(18.78)*	0.436 *(0.265)*	15.99 *(3.15)*	Relative humidity
60.2 *(44.9)*	2301	4.08 *(15.43)*	0.472 *(0.287)*	14.77 *(2.91)*	79%
40.6 *(30.3)*	2325	3.29 *(12.46)*	0.564 *(0.343)*	12.33 *(2.43)*	Barometer
20.5 *(15.3)*	2352	2.48 *(9.39)*	0.842 *(0.512)*	8.27 *(1.63)*	29.8" Hg *(101.0 kPa)*
....	2384	1.80 *(6.82)*	....	....	

Maximum Torque 259.8 lb. ft *(352.2 Nm)* at 1250 RPM
Maximum Torque Rise 20%

MAXIMUM POWER AND FUEL CONSUMPTION (1000 RPM SHAFT)				
Rated Engine Speed—(PTO speed—1158 rpm)				
92.6 *(69.1)*	2200	5.48 *(20.75)*	0.413 *(0.251)*	16.88 *(3.32)*
Standard Power Take-off Speed (1000 rpm)				
88.8 *(66.2)*	1900	5.08 *(19.23)*	0.398 *(0.242)*	17.49 *(3.45)*

Maxiumum Torque 267.7 lb. ft *(362.9 Nm)* at 1250 RPM
Maximum Torque Rise 21%

DRAWBAR PERFORMANCE
FUEL CONSUMPTION CHARACTERISTICS

Power Hp *(kW)*	Drawbar pull *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—9th (2HL) Gear									
77.4 *(57.7)*	3980 *(17.7)*	7.30 *(11.74)*	2200	7.0	0.513 *(0.312)*	13.55 *(2.67)*	183 *(84)*	64 *(18)*	30.0 *(101.5)*
75% of Pull at Maximum Power—9th (2HL) Gear									
61.2 *(45.6)*	2990 *(13.3)*	7.67 *(12.34)*	2268	4.9	0.533 *(0.324)*	13.10 *(2.58)*	181 *(83)*	64 *(18)*	29.9 *(101.4)*
50% of Pull at Maximum Power—9th (2HL) Gear									
42.5 *(31.7)*	2000 *(8.9)*	7.97 *(12.82)*	2300	2.5	0.613 *(0.373)*	11.37 *(2.24)*	178 *(81)*	64 *(18)*	29.9 *(101.4)*
75% of Pull at Reduced Engine Speed—10th (2HH) Gear									
60.9 *(45.4)*	2965 *(13.2)*	7.69 *(12.38)*	1786	4.9	0.473 *(0.288)*	14.72 *(2.90)*	181 *(83)*	70 *(21)*	29.9 *(101.3)*
50% of Pull at Reduced Engine Speed—10th (2HH) Gear									
42.6 *(31.8)*	2025 *(9.0)*	7.90 *(12.72)*	1802	2.6	0.515 *(0.313)*	13.55 *(2.67)*	176 *(80)*	66 *(19)*	29.9 *(101.3)*

Location of Test: AFRC Institute of Engineering Research, Wrest Park, Silsoe, Bedford, England MK45 4HS

Dates of Test: July to August, 1987

Manufacturer: MASSEY FERGUSON MANUFACTURING LIMITED, Banner Lane, Coventry, Warwickshire, England CV4 9GF

FUEL AND OIL: Fuel No. 2 Diesel **Cetane No.** 53.5 **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.8345 **Fuel weight** 6.94 lbs/gal *(0.832 kg/l)* **Oil SAE** 15W30 **Oil consumption for 10 hours** NA **Transmission and hydraulic lubricant** SAE 15W30 **Front Axle lubricant** SAE 15W30.

ENGINE: Make Perkins Diesel **Type** six cylinder vertical **Serial No.** TW 31159U756 259M **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 3.878" × 5.0" *(98.5 mm × 127.0 mm)* **Compression ratio** 16 to 1 **Displacement** 354 cu in *(5806 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** oil bath and centifugal precleaner **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for power steering oil **Fuel filter** two paper elements and sediment bowl **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: Type 2WD, FWA **Serial No.** 5012U01017 **Tread width** rear 59.1" *(1500 mm)* to 83.1" *(2112 mm)* front 2WD - 53.7" *(1365 mm)* to 77.8" *(1977 mm)*, FWA - 68.0" *(1726 mm)* to 82.4" *(2094 mm)* **Wheel base** 2WD - 101.4" *(2576 mm)*, FWA - 103.7" *(2635 mm)* **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Nominal travel speeds mph *(km/h)*** first 1.27 *(2.05)* second 1.62 *(2.61)* third 1.91 *(3.07)* fourth 2.43 *(3.91)* fifth 3.50 *(5.64)* sixth 4.46 *(7.17)* seventh 5.21 *(8.39)* eighth 6.63 *(10.67)* ninth 7.82 *(12.58)* tenth 9.94 *(16.00)* eleventh 14.33 *(23.06)* twelfth 18.23 *(29.34)* reverse 1.91 *(3.07)*, 2.43 *(3.91)*, 7.82 *(12.58)*, 9.94 *(16.00)* **Clutch** single dry disc operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 1893 engine rpm and 1000 rpm at 1900 engine rpm **Unladen tractor mass** 2WD - 7840 lb *(3556 kg)*, FWA - 8315 lb *(3772 kg)*.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD test procedures. The performance figures on this summary are taken from a test conducted under the OECD restricted standard test code procedure.

MAXIMUM POWER IN SELECTED GEARS									
				7th (1HL) Gear					
70.5 *(52.6)*	5935 *(26.4)*	4.46 *(7.17)*	2210	15.0	0.562 *(0.342)*	12.39 *(2.44)*	180 *(82)*	70 *(21)*	29.9 *(101.3)*
				8th (1HH) Gear					
76.0 *(56.7)*	4700 *(20.9)*	6.07 *(9.77)*	2200	8.9	0.523 *(0.318)*	13.30 *(2.62)*	183 *(84)*	61 *(16)*	29.9 *(101.3)*
				9th (2HL) Gear					
77.4 *(57.7)*	3980 *(17.7)*	7.30 *(11.74)*	2200	7.0	0.513 *(0.312)*	13.55 *(2.67)*	183 *(84)*	64 *(18)*	30.0 *(101.5)*
				10th (2HH) Gear					
77.1 *(57.5)*	3055 *(13.6)*	9.46 *(15.22)*	2200	5.0	0.510 *(0.310)*	13.65 *(2.69)*	183 *(84)*	63 *(17)*	29.9 *(101.4)*

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum sound level in 6th (3LH) gear	99.0
Bystander in 12th (3HH) gear	91.0

CENTER OF GRAVITY	
Horizontal distance forward from centerline of rear wheels	38.9″ *(989 mm)*
Vertical distance above roadway	34.8″ *(884 mm)*
Horizontal distance from center of rear wheel tread 0″ *(0 mm)* to the right/left	

We, the undersigned, certify that this is a true summary of data from OECD Reports No. **1105 & 1106,** Nebraska Summary 037/038, August 14, 1992.

LOUIS I. LEVITICUS
Engineer-in-Charge

L. L. BASHFORD
R. D. GRISSO
K. VON BARGEN
Board of Tractor Test Engineers

The following performance figures apply to the tractor equipped with a Front Drive Axle.

DRAWBAR PERFORMANCE FUEL CONSUMPTION CHARACTERISTICS

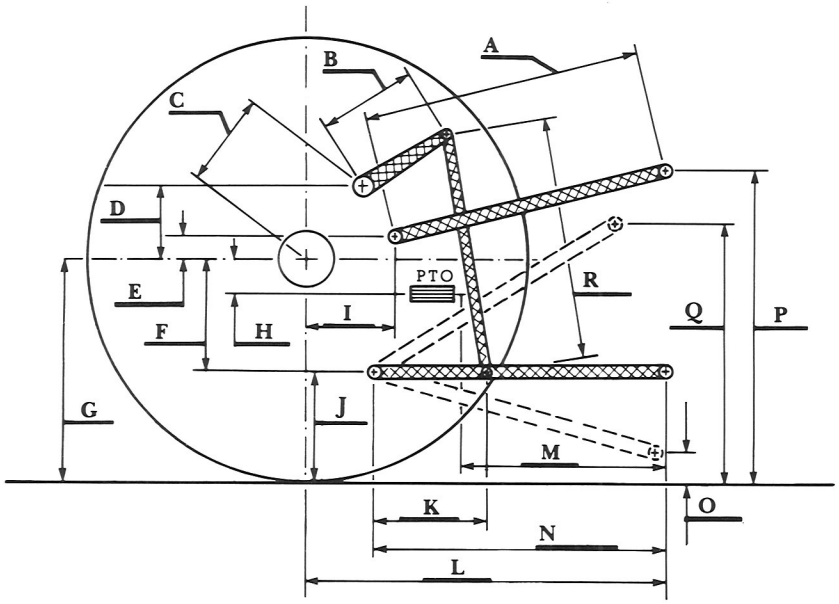
Power Hp *(kW)*	Drawbar pull *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—9th (2HL) Gear									
73.5 *(54.8)*	3640 *(16.2)*	7.57 *(12.18)*	2197	3.7	0.534 *(0.325)*	13.05 *(2.57)*	171 *(77)*	73 *(23)*	30.0 *(101.7)*
75% of Pull at Maximum Power—9th (2HL) Gear									
58.5 *(43.6)*	1745 *(12.2)*	8.00 *(12.87)*	2266	3.0	0.561 *(0.341)*	12.44 *(2.45)*	165 *(74)*	73 *(23)*	30.0 *(101.7)*
50% of Pull at Maximum Power—9th (2HL) Gear									
39.3 *(29.3)*	1820 *(8.1)*	8.09 *(13.02)*	2300	2.4	0.672 *(0.409)*	10.36 *(2.04)*	162 *(72)*	73 *(23)*	30.0 *(101.7)*
75% of Pull at Reduced Engine Speed—10th (2HH) Gear									
57.9 *(43.2)*	2745 *(12.2)*	7.92 *(12.75)*	1788	3.0	0.508 *(0.309)*	13.71 *(2.70)*	174 *(79)*	79 *(26)*	30.0 *(101.5)*
50% of Pull at Reduced Engine Speed—10th (2HH) Gear									
40.0 *(29.8)*	1845 *(8.2)*	8.13 *(13.08)*	1809	2.4	0.556 *(0.338)*	12.54 *(2.47)*	169 *(76)*	79 *(26)*	30.0 *(101.5)*
MAXIMUM POWER IN SELECTED GEARS									
				5th (3LL) Gear					
63.8 *(47.6)*	7825 *(34.8)*	3.06 *(4.92)*	2239	15.0	0.590 *(0.359)*	11.78 *(2.32)*	167 *(75)*	81 *(27)*	30.1 *(101.8)*
				6th (3LH) Gear					
71.1 *(53.0)*	6450 *(28.7)*	4.13 *(6.65)*	2209	8.0	0.547 *(0.333)*	12.74 *(2.51)*	169 *(76)*	81 *(27)*	30.1 *(101.8)*
				7th (1HL) Gear					
72.8 *(54.3)*	5555 *(24.7)*	4.92 *(7.91)*	2201	6.0	0.539 *(0.328)*	12.89 *(2.54)*	165 *(74)*	72 *(22)*	30.1 *(101.8)*
				8th (1HH) Gear					
73.4 *(54.7)*	4315 *(19.2)*	6.38 *(10.26)*	2196	4.4	0.534 *(0.325)*	13.05 *(2.57)*	169 *(76)*	70 *(21)*	30.0 *(101.7)*
				9th (2HL) Gear					
73.5 *(54.8)*	3640 *(16.2)*	7.57 *(12.18)*	2197	3.7	0.534 *(0.325)*	13.05 *(2.57)*	171 *(77)*	73 *(23)*	30.0 *(101.7)*
				10th (2HH) Gear					
70.8 *(52.8)*	2720 *(12.1)*	9.76 *(15.71)*	2197	3.0	0.544 *(0.331)*	12.79 *(2.52)*	172 *(78)*	79 *(26)*	30.0 *(101.6)*

TIRES AND WEIGHT		Tested Without Ballast Front Wheel Assist	 2WD
Rear Tires	—No., size, ply & psi *(kPa)*	Two 18.4-34; 8; 12 *(83)*	Two 18.4-34; 8; 12 *(83)*
Front Tires	—No., size, ply & psi *(kPa)*	Two 14.9-24; 6; 12 *(83)*	Two 10.0-16; 8; 26 *(179)*
Height of Drawbar		15.4 in *(390 mm)*	20.1 in *(510 mm)*
Static Weight	—Rear	4845 lb *(2197 kg)*	4830 lb *(2191 kg)*
	—Front	3470 lb *(1575 kg)*	3010 lb *(1365 kg)*
	—Total	8315 lb *(3772 kg)*	7840 lb *(3556 kg)*

THREE POINT HITCH PERFORMANCE (OECD STATIC TEST)

CATEGORY: II
Quick Attach: None

Maximum Force Exerted Through Whole Range:	4340 lbs	*(19.3 kN)*
i) Opening pressure of relief valve:	NA	
Sustained pressure of the open relief valve:	3465 psi	*(239 bar)*
ii) Pump delivery rate at minimum pressure:	8.8 GPM	*(33.3 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	8.0 GPM	*(30.4 l/min)*
Delivery pressure:	3045 psi	*(210 bar)*
Power:	14.2 Hp	*(10.6 kW)*



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	*mm*
A	31.2	*792*
B	10.5	*267*
C	12.0	*304*
D	9.2	*233*
E	8.1	*205*
F	8.3	*212*
G	30.3	*770*
H	5.0	*128*
I	7.3	*186*
J	22.0	*558*
K	15.7	*399*
L	38.3	*973*
M	26.7	*677*
N	39.6	*1005*
O	7.9	*200*
P	42.0	*1068*
Q	39.9	*1013*
R	17.7	*450*

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